

Abstract Submitted  
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**Inelastic Collisions of a Fermi Gas in the BEC-BCS Crossover regime** YINGYI ZHANG, XU DU, JOHN THOMAS, Duke University — We measure inelastic collisions of a Fermi gas of  ${}^6\text{Li}$  in the BEC-BCS crossover regime. We load the ultracold atoms of  ${}^6\text{Li}$  into a  $\text{CO}_2$  laser standing wave, forming a two dimensional Fermi gas. Atomic density in the 2-D system is 20 times higher than that in a 3-D Fermi gas, which leads to a significant increase in atom loss. At energy  $E/E_F \simeq 1.8$ , data shows a dominant three-body decay process. We measure the magnetic field dependence of the three-body inelastic collision coefficients. At  $E/E_F \simeq 0.7$ , data shows coexistence of two-body and three-body decay processes on and below the Feshbach resonance. We suggest the two-body decay may involve pairs of atoms and determine the two-body inelastic collision coefficients.

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